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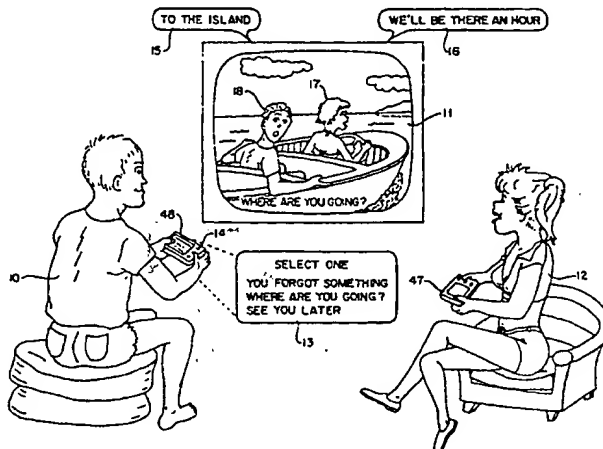
(57) Abstract

This invention consists of methods of simulating voice conversations with talking animated characters (17, 18) on a television or video screen (11). The animated characters (17, 18) talk to each other and to humans (10, 12). Each human holds a light-weight controller (47, 48) that has push buttons (14) next to a display of variable phrases or sentences (13) for each human's side of the dialog. This dialog includes alternative words (13, 26) for a human player to say to a character or for a character to say (15, 16, 20, 23, 27) or actions (Figs. 3, 7, 10) for a character to do. A human (10, 12) responds to what a character (17, 18) says or does by pressing a button (14) next to a selected phrase. An animated character then vocally responds (15 in Fig. 1) to the selected phrase as if it had been spoken by a human or as if it were the character's own words. Each scene (64) branches to subsequent scenes (65, 66, 67) and within each scene there are several branching dialog sequences (60, 61, 62, 69, 63, 68).

-1-

TALKING VIDEO GAMES

Technical Field

This invention relates to video games, animated
cartoons, and picture/sound synchronization.

5   ## Background Art

We are all born with a desire to talk and to be
talked to. Listening to other people talk and thereby
sharing their emotional experiences is also a desire we
are born with and this desire has been partly satisfied
10   by motion picture film and television in which voice
sounds are now essential. Until recently, voice sounds
were seldom used in video games or were used in an
optional manner. People have a desire to participate
in voice conversations with other people, but this
15   desire is not satisfied by current video games.

Adding voice sounds to conventional video games
is not enough to simulate a face to face voice
conversation. A talking video game called Thayer's
Quest was attempted in 1984 and was played from an
20   analog laser-readable video disc. One of the reasons
for the commercial failure of Thayer's Quest was that
each spoken sentence was programmed to accompany only
one sequence of video frames. Since the video was not
compressed, the maximum amount of play time was limited
25   to about half an hour which was further reduced to a
fraction of that by the branching story. Hence, only a
few minutes of voice sounds were actually heard during
the game. Whenever a human player saw a certain video
character, the character usually spoke the same words.
30   This greatly reduced the entertainment value of the
game. Another consequence of programming the audio and
video to be inseparable, was that branching scenes were
not distinguished from branching dialog. Talking video
games will be much more entertaining if each scene has
35   a rich variety of possible dialog sequences.

-2-

Talking video games are disclosed in my U.S. Patents
Nos. 4,305,131; 4,333,152; 4,445,187 and 4,569,026. These
patents show only one talking animated character and one
human player, although multiple characters and players
5   were suggested in the texts. These patents also show
push-button controllers that display alternative words to
say to animated characters.

It is common practice in the video game art for
stories to branch. It is also common practice for digital
10   data of animated characters to be stored separately from
background scenery and to generate each frame of an
animated picture from both the background data and the
character data to minimize the number of stored images.

It is well known for human players to input choices
15   using any of a variety of input devices such as push
buttons, rotatable knobs, pressure sensitive membrane,
proximity sensitive pads or screen overlay, light pen,
light sensitive gun, joy stick, mouse, track ball, moving
a cursor or crosshairs or scrolling through highlighted
20   options, speech recognition, etc.

In the prior art, each choice by the human can be
immediately followed by a synthesized voice or digitized
voice recording that speaks the words selected by the
human player, so the human will quickly adjust to the fact
25   that the spoken words he hears for his side of the dialog
are initiated by his fingers rather than his vocal cords.

The prior art also includes methods for generative
video images of moving lips and facial expressions on a
talking head or other animated character. See for
30   example, U.S. Patent No. 4,884,972 issued December 5, 1989
to Elon Gasper who contemplates use in video games.

Drawing Figures
FIG. 1 illustrates an animated cartoon talking game
with two human players who take turns selecting words to
35   say to one or two animated characters on a TV screen who
then respond to the words.

-3-

FIG. 2 illustrates an animated talking game with one human player and two animated cartoon characters on a TV screen who talk to the human and to each other.

FIG. 3 is an animated cartoon illustrating a kissing scene in which one character's unspoken thoughts are sounded.

FIG. 4 is an animated cartoon illustrating a ledge-hanging scene in which a talking cartoon character requires immediate action by the human player.

FIG. 5 is an animated sequence illustrating branching dialog in which two cartoon characters respond to sentences selected by a human player by talking to the human player and to each other.

FIG. 6 is an animated sequence illustrating branching dialog in which one animated character responds to a sentence selected by a human player and refers to a second character (not shown).

FIG. 7 is an animated sequence showing hands simulating the hands of a human player performing an action.

FIG. 8 is a flow diagram illustrating scene branching and dialog branching within each scene.

FIG. 9 is a pictorial view of a video game system having a CD-ROM disc drive connected to a television or video monitor with auxilary devices for displaying prompting words.

FIG. 10 is an animated sequence illustrating both dialog branching and scene branching in which one character is shown helping the other two characters get out of a dangerous situation.

FIG. 11 is an apparatus block diagram illustrating flow of data and method steps to generate a cyclical game play with two animated characters.

-4-

Description of Preferred Embodiments

The characters in role-playing video games are of
two kinds: player-controlled characters and non-player
characters. A player-controlled character is a human
5   player's animated counterpart and does what the human
player chooses to have him do. Non-player characters are
not directly controlled by a human player, but can be
indirectly influenced by a human player, either by
responding to an action selected by the human player or
10   by responding to what a player-controlled character does
or says. Non-player characters should be programmed to
say many different alternative things depending on what a
player or player-controlled character has just "said". A
scene may repeat several times with a non-player character
15   saying something different each time and the alternative
responses for each human player being different each time
a scene is repeated.

Hand-held controllers are preferable to displaying
menus on the video screen, because in two-person games the
20   menu displayed to one player may be different from the
other player's menu. Part of the fun comes from a player
not knowing what choices the other player has. Also,
video screen menus disrupt the illusion that a player is
talking with a real video character. Hence, the preferred
25   embodiment of my invention makes use of hand-held menu
display controllers with a push-button or equivalent for
each menu item. The invention also makes use of echo
voices that repeat the selected words so that other human
players will know what is being said.

30   Referring to FIG. 1, in a typical embodiment of this
invention a video game system generates for display on a
video screen 11 an animated picture sequence to two human
game players. Human players 10 and 12 take turns selecting
a phrase or sentence to "say" to a character or characters
35   on a video screen who then talk back responsively. In this
example it is player 10's turn. Player 12's hand-held

-5-

controller is blank, indicating that she cannot say
anything to a character at this moment. The video screen
shows two animated characters traveling in a boat or other
vehicle. The characters are non-player characters that
5   talk directly to human players in this example. Each
human player holds a hand-held controller with three
push buttons next to a liquid-crystal display 13, shown
enlarged in FIG. 1 for clarity.
     As the boat scene begins, the video game system
10   displays two or three or more alternative responses on
display 13 or other display device. While player 10 is
deciding which button to press, a linking picture sequence
(not shown) continues to show the same boat scene with one
character looking back from the boat as if looking at
15   player 10 standing on the dock. Player 10 selects one of
the displayed responses (in this example "WHERE ARE YOU
GOING?") which is then echoed as voice sounds or is
displayed as sub-titles on the video screen so that player
12 will know what player 10 has just said to an animated
20   character. This character 18 answers responsively with
voice sounds: "TO THE ISLAND." after which a second
character 17 responds with "WE'LL BE THERE AN HOUR." in
response to what character 18 just said.
     In the preferred embodiment, the game system
25   generates a voice to echo the words selected by player 10
so that player 12 hears what player 10 has "said" to the
animated character. When it is player 12's turn, player
12's hand-held controller will then display alternative
words (not shown in FIG. 1) that she can "say" in response
30   to what animated character 17 or 18 has said. Thus a
three-way or four-way dialog can be simulated.
     Before each game begins, display 13 may show
identifying information for each player-controlled
character so that each human player may select which
35   character he or she wants to play. Alternatively, each
player-controlled character may be shown on video screen
11 and the question asked "Who wants to play this

-6-

character?" for each character shown. The game system
then records which hand-held controller responds to the
question, so later that character's words will be shown
on display 13 only for the player who is playing that
5   character (in this example player 10). A human player may
also choose to play a player-controlled character that need
not always be shown on the video screen, but who may be
off-screen (for example, standing on the dock in FIG. 1),
and can carry on a dialog with on-screen characters.

10   Referring to FIG. 2, in another embodiment of the
invention, a video game system generates for display on a
video screen 11 an animated picture sequence having two or
more animated talking characters 17 and 18. In this example,
character 17 is a player-controlled character that human
15   player 12 controls. Player 12 plays the role of character
17 and can talk to character 18 and other characters in
the game through character 17. Player 12 holds a
hand-held controller 47 with three push buttons next to a
liquid-crystal display 13, shown enlarged in FIG. 2 for
20   clarity. The game system displays three alternative
responses on display 13. Player 12 selects one of the
displayed responses (in this example "KISS ME AGAIN") with
push button 14. The echo voice sounds 15 for character 17
then repeat the words selected from display 13. The words
25   are directed at character 18 whose voice sounds 16 then
respond to character 17.

            The two animated characters 17 and 18 may respond in
reverse sequence, that is, the non-player character 18 may
say his line first so that the player-controlled character
30   17 can respond as ordered by human player 12. For example,
after player 12 selects "KISS ME AGAIN", character 18 may say
"WHAT DO YOU WANT TO DO?" a prerequisite sentence that is
not one of the displayed alternatives, then character 17
can respond with "KISS ME AGAIN" which is responsive to
35   what character 18 has just said.

            Echo voices or sub-titles may also be used to express
unspoken thoughts or the thoughts of non-speaking beings

-7-

such as babies or animals or inanimate objects. Cloud
balloon 19 in FIG. 2 represents an unspoken thought of
character 18 which is sounded (with mouth not moving) in
response to spoken sentence 15 of character 17. Voice

5   sounds for unspoken thoughts may be electronically altered
to indicate to players that a voice is not a normal spoken
voice. For example, unspoken thoughts can be given a
hollow or tremulous sound or a whispering sound by
electronically or digitally editing voice sound data

10   before converting to audio.
        Referring to FIG. 3, when characters 17 and 18
perform a competitive or cooperative activity such as
kissing, one of the characters may speak (with moving
mouth) or think unspoken thoughts (sounded with unmoving

15   mouth) as in cloud balloon 29, responsive to the action
being shown or to what was said or done in the prior
sequence shown in FIG. 2 or in response to a phrase
selected from display 13.
        Referring to FIG. 4, in another embodiment of this

20   invention, a video game system generates an animated
picture sequence showing a character 30 hanging by his
fingers from a ledge on the outside of a building.
His friends on the roof have thrown him a rope which
is not long enough to reach character 30. This

25   ledge-hanging scene is followed by the next scene
shown in FIG. 5.
        Referring to FIG. 5, picture sequences 21, 25, and
28 are parts of one roof scene in which two talking
characters discuss how to rescue the character in FIG. 4.

30   One or two human players participate in the conversation
by "saying" words or phrases or sentences to the animated
characters who then answer responsively and ask questions
or make remarks that lead to the next input by a player.
The alternatives shown on display 22 are suggested

35   solutions to the problem posed in sentence 20. When
the human player 10 presses button 14 next to
"CALL EMERGENCY", character 17 responds by asking

-8-

question 23 to character 18 who responds with question
24 directed at the human player. Question 24 is also
accompanied by display of a new menu of alternative
actions 26. When a player presses the button next to

5   "SLIDE DOWN THE ROPE", character 17 comments on this
choice of action with sentence 27 in sequence 28. Thus
a simulated verbal dialog can continue through several
exchanges of words within the same scene.

Referring to FIG. 6, in another embodiment of this

10   invention a video game system generates animated picture
sequence 31 and 32. The picture sequence has one scene
showing a burning car in the background and a frightened
woman 17 in the foreground. During part 31 of the
sequence the woman's voice 15 says "PLEASE HELP ME! MY

15   MOTHER IS TRAPPED IN THE CAR!" The game then displays two
or more alternative actions on hand-held display 13 or on
the video screen or other display device. The human
player 10 selects one of the displayed responses (such as
"PRY THE DOOR OPEN") and presses the corresponding push

20   button 14 or equivalent. While the player is deciding
which button to press, a linking picture sequence (not
shown) continues to show the same scene with the woman
looking anxiously at the player. When the player selects
a response, part 32 of the animated sequence continues

25   showing the same burning car scene with the woman's
voice 16 answering responsively: "I TRIED TO, BUT I CAN'T
GET IT OPEN".

Selecting a response by pushing a button 14 can
result in a change to a different scene, but in this FIG. 6

30   example the scene remains the same while the branching
dialog continues. Each of the three alternative responses
on display 13 will result in a different answer by animated
character 17. The animated sequences 31 and 32 are
generated by the video game system by overlaying three

35   moving pictures: (1) the background sequence showing the
burning car with flames continually flickering, (2) a
sprite or mosaic of sprites showing the woman character 17

-9-

moving in a natural manner against the background and (3)
mouth and other facial sprites selected (by table lookup)
by the game system approximately lip-synchronized with
voice sounds 15 and 16.

5   Since the player's response time is variable,
sequence 31 or 32 with a closed mouth sprite should cycle
continually until a button 14 is pressed or until a time
limit is reached, at which time a prompting picture
sequence with words such as "Hurry! Hurry!" may be sounded

10   and displayed with moving mouth sprites. The burning car
can be any object such as a damaged bus, airplane, boat,
or building that provides a danger situation.

           Referring to FIG. 7, the game system generates an
animated sequence showing one or more hands 36 simulating

15   the hands of a human player performing an action.
In this example, animated sequence 33 shows a hand
holding pipe 35 or a fire extinguisher or other such
tool while the human player whose real hand 10 is
illustrated pressing button 14 selects one of the

20   alternative actions shown on display 13. Note that
display 13 in FIG. 7 shows alternative actions which
would result in scene changes, but display 13 in FIG. 6
shows alternative words or phrases to say to animated
character 17 in a common scene followed by a scene

25   change. In FIG. 7, pressing button 14 to select
"PRY THE DOOR OPEN" results in picture sequence 34
showing hands 36 prying open the car door with pipe 35.

           Referring to FIG. 8, a flowchart illustrates the
distinction between branching dialog and branching

30   scenes. For example, at dialog branch point 60 a
player is presented with two or more alternatives to
choose from which correspond to the menu of verbal
expressions displayed on hand-held controller 48 in
Figures 1-7. Each of the alternative selections will

35   result in a different verbal response 61 or 62 by one
or more of the animated characters, but does not result
in a scene change in this instance. However, the

-10-

alternatives at branch point 63 in FIG. 8 will result
in a scene change, either to scene 65 or to scene 66.
Branch point 69 may result in either a scene change to
scene 67 or a dialog branch depending on a player's
5   selection. Dialog branching in each scene provides
a large variety of possible dialog sequences without
duplicating the animated picture data for each dialog
branch. New animated picture data is needed only
whenever branching to a new scene occurs. If player 10
10   in FIG. 6 selects the first of the three alternative
actions shown on display 13, the scene changes to the
pipe scene in FIG. 7 which corresponds to response 68
in FIG 8. Response 68 includes voice sounds 16 of
character 17 in FIG. 6 followed by a scene change and
15   actions by a second character 36 in FIG. 7.
        Referring to FIG. 9, video game system 42 is
connected by cable 44 to a television or video monitor 11
and to one or more hand-held control units 48 and 47 or
portable game system 46, each having three push buttons 14
20   next to a liquid-crystal display 13 showing a variable
menu of verbal expressions. Infra-red or radio signals
may be used instead of cables. System 42 includes a
disk reader that reads digital data from a CD-ROM disk 43,
or write-once disk or card or other medium containing
25   digital data from which system 42 generates animated
picture signals. Disk 43 also contains compressed audio
for voice and other sounds, synchronizing data, and
digitized words for display on units 48 and 47. Portable
game system 46 with appropriate ROM program cartridge may
30   substitute for display units 48 and 47.   Cable 45 connects
game system 42 to display unit 48, 46 or 47 and transmits
alternative prompting words or other verbal expressions for
display. Cable 45 also transmits push-button 14 selection
signals to system 42.
35   If portable game system 46 has only one or two
available push-buttons, selection from among responses
shown on display 13 may be done as shown in FIG. 7 by

-11-

pressing push-button 14 multiple times to position a
pointer 49, cursor, or other such indicator next to (or
on) a selected sentence.

     Referring to FIG. 10, in one embodiment of this
5   invention a video game system generates on a video
screen 11 several sequences of animated pictures 21,
25, and 28 showing three talking characters engaged in
a rescue activity. The characters have distinctive
voices. As sequence 21 begins, characters 18 and 30
10   are in a dangerous situation and character 17 is trying
to rescue them. Character 17 speaks words represented
in voice balloon 20 commenting on the rescue activity.
A human player 12 in this example holds a hand-held
controller 47 with three push buttons 14 positioned
15   next to corresponding menu items on a liquid-crystal
display 13. Two or more alternative response sentences
or phrases are shown on display 13, each being
associated with one of the three push buttons 14. The
hand of human player 12 is shown pressing one of the
20   buttons 14 that selects one of the alternative
sentences to be spoken by character 30.

     While human player 12 is deciding which button to
press, a linking picture sequence (not shown) continues
to show the same scene with the characters trying to
25   pull up on the rope or trying to climb up the rope.

     When player 12 selects one of the displayed
alternative response sentences that calls for an action
shown in a different scene, branching to the next scene
occurs beginning in this example with animated picture
30   sequence 25. The selected sentence is sounded in the
voice of player-controlled character 30 who repeats the
words selected by human player 12. These voice sounds
are represented in balloon 23 (in this example "GRAB
THE ROPE TOM"). Tom is character 18 who is shown in
35   sequence 21 hanging dangerously onto an ankle of
character 30. After character 30 says the selected
sentence in balloon 23, character 18 grabs hold of the

-12-

rope and then responds in his voice with the words
"I'VE GOT IT" which are the preprogrammed words for the
selected sentence.   These voice sounds of character 18
are represented in balloon 24.   The actions of

5   character 18 are the preprogrammed actions for the
selected sentence.   If human player 12 had selected a
different one of the alternative sentences, a different
scene would result and character 18 would have behaved
differently and spoken different response words.

10   The video game system next generates an animated
picture sequence showing character 18 climbing the
rope.   This climbing sequence is not shown in the
drawings.   When character 18 reaches character 17 in
sequence 28, character 17 says in her voice "HOLD MY

15   ARM" (in balloon 27) and the rescue activity proceeds.
Thus, the animated characters perform or attempt to
perform actions and talk about these actions while both
the actions and voice sounds are controlled directly or
indirectly by a human player or players.   The words

20   spoken by character 17 may also be selected by a human
player from a second menu (not shown) of alternative
sentences for her to say.   This human player may be a
second player 10 as shown in FIG. 5.

            After the end of sequence 28, the game system
25   generates another animated sequence, then another
sequence, then another sequence, etc.   in which a human
player controls, directly or indirectly, character
actions and voice sounds as described above for FIG.10.

30   Referring to FIG. 11 which is a block diagram of
a special-purpose apparatus for performing some of
the video game illustrated in FIG. 1, the apparatus
performs steps 1 through 7 in sequence, so that the
animated picture sequence on the television or video

35   screen 11 alternates between two characters in this
example.   In step 1, animated picture generator 51
generates a video or RF signal 44 for display on video

-13-

screen 11 of an animated picture from digitized
animated character data stored in memory 70 of a first
talking character. In step 2, hand-held controller 48
displays on the liquid-crystal display 13 several
5   alternative sentences or other verbal expressions from
data read via line 72 from memory 52 storing the
alternative sentences. In step 3, one of the push
buttons 14 generates a selection signal (indicated by
one of lines 53) selecting a sentence from among the
10   alternative sentences in memory 52 and also selects the
corresponding (indicated by dotted lines) digitized
voice recordings from memory 57 and 58.   In step 4,
voice signal generator 54 generates a signal 41 for
output as first voice sounds from the selected digitized
15   voice recording (via line 73) in memory 57 that expresses
or responds to the words displayed on controller 48.
In step 5, animated picture generator 55 generates a
signal 44 for display on video screen 11 of an animated
picture from digitized animated character data stored
20   in memory 71 of a second talking character. In step 6,
voice signal generator 56 generates a signal 41 for
output as second voice sounds from the selected digitized
voice recording (via line 74) in memory 58 that respond
to the words generated by voice signal generator 54. In
25   step 7, a new set of alternative sentences from disk or
memory 59 is loaded into memory 52, 57 and 58 and the
sequence of steps begins again with step 1.

     To allow each background scene to be used with
different animated characters who can move around against
30   the background scene, the digital animation data for the
background scene should be stored separately from the
digital animation data for each character. Similarly,
to allow each character to say many different sentences
without a scene change, the digitized voice data should
35   be independent of the animation data. In the preferred
embodiment, animated character video, voice sound
sequences and guidance word sequences are independently

-14-

generated from separately stored digital data. Dialog
data that is not used in one scene may be used later in a
different scene with the same or different characters.
The voice data may consist of sequences of codes or
5   compressed digital recordings of words, phrases, word
segments or phonemes in several distinctive voices so that
each character can speak thousands of preprogrammed words
or sentences. Similarly, the digital data for each
animated character's body may be stored separately from
10   sprite data for moving lips, facial expressions, and
gestures, so that each character and its distinctive voice
can be lip-synchronized with different mouth movements
depending on the dialog. The digital data for each
animated character may also combine body images, lips,
15   facial expressions, hand gestures and voice sounds.
When a human player presses one of the buttons 14
(FIG. 1, 2, 5, 6 or 7) the game system may generate a
voice sound speaking the selected sentence as a
substitute for the player's side of the dialog. The
20   animated character then "responds" as if the generated
voice sounds had been spoken by the human player.
Because the player selects the words which are actually
sounded, he will quickly adjust to the fact that the
spoken words he hears for his side of the dialog are
25   initiated by his fingers rather than his vocal cords.
This echo voice repeating the selected words is
important for games with multiple human players so that
each player will hear what each of the other players
has "said" to on-screen characters. Pushing one of the
30   buttons 14 selects both a simulated verbal response to
the words previously spoken by an animated character
and also selects a new dialog sequence that corresponds
to the simulated verbal response shown on display 13.
The selected dialog sequence includes the face and
35   voice of the animated character speaking words which
are responsive to the player's selected verbal
response.

-15-

Alternatively, sub-titles such as illustrated on
video screen 11 in FIG. 1 may be used instead of echo
voices and be displayed on a video screen or on a
hand-held controller as a substitute for the player's
5   side of the dialog.

Each character can be an animated cartoon,
digitized live action, analog live action, a sprite or
the like, and be player controlled or not. The term
"verbal expression" means any word, words, phrase,
10   sentence, question, expletive, curse, keyword,
combination of keywords, symbol, icon, or any
meaningful human voice sound such as "huh?" or "hmmm"
or laughter or scream. The word kissing is used herein
to mean simulated touching of one animated character's
15   mouth to another animated character's mouth or other
body part.

No video game yet satisfies the basic human desire
for people to speak and respond to us as individuals.
Although the telephone provides a partial satisfaction
20   of our desire to talk with other people, it is necessarily
limited to living people who are willing to talk with
us. Historical and imaginary people cannot talk with
us and famous living people do not want to. Hence,
there is a strong but unfulfilled human desire waiting
25   to be satisfied by new technology. Talking animated
characters will change the nature of video games as
dramatically as talking pictures changed silent film.
Talking video games will let human players talk with
images of famous people (living, historical or imaginary)
30   and with animal-like characters, and participate in
simulated adventures and dramas and conversations with
interesting characters and groups of characters who
will talk to each player responsively. Talking video
games that stir human emotions like dramatic films will
35   have lasting appeal, because they will satisfy a basic
human desire, the desire to talk with other people.

-16-

Although I have described the preferred embodiments
of my invention with a degree of particularity, it is
understood that the present disclosure has been made
only by way of example and that equivalent steps and
components may be substituted and design details
changed without departing from the spirit and scope
of my invention.

-17-

CLAIMS

1. A method of simulating voice conversations by a
    video system (42) that generates a signal (44)
    representing animated pictures of two or more
5   talking characters (17,18) for display on a
    video screen (11) and generates a signal (41)
    representing the respective voices of the
    talking characters,

10 wherein digital data for background scenes and
    digital data for each animated character (17,18)
    and digitized voice data are each stored separately
    on a data storing medium (43) and read by said
    video system (42), said method comprising the
15 following steps:

    a) digitally storing animated picture data (70,71)
    for first (18) and second (17) talking characters;

20 b) said video system (42) generates (51,55) a
    signal (44) from said animated picture data (70,71)
    for display as animated pictures on said video
    screen (11);

25 c) said video system (42) digitally stores first
    voice sound data (57) for said first talking character
    (18) and generates (54) a signal (41) from this first
    voice sound data (57) for output as first voice sounds;

-18-

d) said video system (42) transmits (72) a first set
of alternative guidance words or other preprogrammed
verbal expressions (52) in digital form to a
first manually operated control device (48) which
5   displays (13) the first set of alternative verbal
expressions (52);

e) one of said first set of verbal expressions is
manually selected (14) and said first control device
10   (48) transmits a corresponding selection signal (53)
to the video system (42);

f) said video system (42) digitally stores second
voice sound data portions (57) for said first talking
15   character (18) corresponding to said first set of
alternative verbal expressions (52);

g) said video system (42) generates (54) a signal (41)
from one portion of said second voice sound data (57)
20   in accordance with said transmitted selection signal
(53) for output as second voice sounds of said first
talking character (18);

h) said video system (42) digitally stores third
25   voice sound data portions (58) for said second
talking character (17) corresponding to said second
voice sound data portions (57);

-19-

i) said video system (42) generates (56) a signal (41)
for output as voice sounds of said second talking
character (17) from the third voice sound data
portion (74) that corresponds to the second voice
5   sound data portion (73) from which the signal for
said second voice sound was generated; and

j) said video system (42) transmits a second set of
alternative guidance words or other preprogrammed
10   verbal expressions (52) in digital form in accordance
with said transmitted selection signal to a second
manually operated control device (47) which displays
(13) the second set of alternative verbal expressions
in order to be selected and generate a signal (53)
15   for corresponding voice sounds.

-20-

2.   A method of simulating voice conversations by a
     video system (42) that generates a signal (44)
     representing animated pictures of a talking
     character (18) for display on a video screen (11)
5   and generates a signal (41) representing the
     voice of the talking character,

     wherein digital data for background scenes and
     digital data for the animated character (18) and
10   digitized voice data are each stored separately
     on a data storing medium (43) and read by said
     video system (42), said method comprising the
     following steps:

15   a) said video system (42) digitally stores first
     voice sound data (57) for said talking character (18)
     and generates (54) a signal (41) from this first
     voice sound data for output as first voice sounds;

20   b) said video system (42) transmits (72) a first set
     of alternative guidance words or other preprogrammed
     verbal expressions (52) in digital form to a
     first manually operated control device (48) which
     displays (13) the first set of alternative verbal
25   expressions (52);

     c) one of said first set of verbal expressions is
     manually selected (14) and said first control device
     (48) transmits a corresponding first selection
30   signal (53) to the video system (42);

-21-

d) said video system (42) digitally stores second
voice sound data portions (57) for said talking
character (18) corresponding to said first set of
alternative verbal expressions (52);

5   e) said video system (42) generates (54) a signal (41)
from one portion of said second voice sound data (57)
in accordance with said first transmitted selection
signal (53) for output as second voice sounds of said
talking character (18);

10   f) said video system (42) transmits a second set of
alternative guidance words or other preprogrammed
verbal expressions (52) in digital form to a second
manually operated control device (47) which displays
the second set of alternative verbal expressions;

15   g) one of said second set of verbal expressions is
manually selected (14) and said second control device
(47) transmits a corresponding second selection
signal (53) to the video system (42);

20   h) said video system (42) digitally stores third
voice sound data portions (58) for said talking
character (18) corresponding to said second set of
alternative verbal expressions (52); and

        i) said video system (42) generates (56) a signal (41)
from one portion (74) of said third voice sound data
in accordance with said second transmitted selection
signal for output as third voice sounds of said
talking character (18).

-22-

3.   A method of simulating voice conversations by a
      video system (42) that generates a signal (44)
      representing animated pictures of two or more
      talking characters (17,18) for display on
5   a video screen (11) and generates a signal (41)
      representing the respective voices of the
      talking characters,

      wherein digital data for background scenes and
10   digital data for each animated character (17,18)
      and digitized voice data are each stored separately
      on a data storing medium (43) and read by said
      video system (42), said method comprising the
      following steps:

15   a) digitally storing animated picture data for
      first (18) and second (17) talking characters;

      b) said video system (42) generates (51,55) a
      signal (44) from said animated picture data (70,71)
20   for display as animated pictures on said video
      screen (11);

      c) said video system (42) digitally stores first
      voice sound data (57) for said first talking character
25   (18) and generates (54) a signal (41) from this first
      voice sound data (57) for output as first voice sounds;

-23-

d) said video system (42) transmits (72) a first set
of alternative guidance words or other preprogrammed
verbal expressions (52) in digital form to a first
display means (13);

5   e) one of said first set of verbal expressions is
manually selected (14) and a first control device
(48) transmits a corresponding selection signal (53)
to the video system (42);

10   f) said video system (42) digitally stores second
voice sound data portions (57) for said first talking
character (18) corresponding to said first set of
alternative verbal expressions (52);

15   g) said video system (42) generates (54) a signal (41)
from one portion of said second voice sound data (57)
in accordance with said transmitted selection signal
(53) for output as second voice sounds of said first
talking character (18);

20   h) said video system (42) digitally stores third
voice sound data portions (58) for said second talking
character (17) corresponding to said second voice
sound data portions (57);

-24-

i) said video system (42) generates (56) a signal (41) for output as voice sounds of said second talking character (17) from the third voice sound data portion (74) that corresponds to the second voice sound data

5   portion (73) from which the signal for said second voice sound was generated; and

j) said video system (42) transmits a second set (59) of alternative guidance words or other preprogrammed

10   verbal expressions (52) in digital form in accordance with said transmitted selection signal to a display means (13) in order to be selected and generate a signal for corresponding voice sounds.

15 4.   The method of claims 1 to 2, wherein said first and second control devices are the same control device.

    5.   The method of claims 1 to 3, wherein the animated pictures of said talking animated characters are

20   generated from digitized images.

    6.   The method of claims 1 to 3, wherein at least some of said voice sounds are altered to indicate that the altered voice sounds represent unspoken thoughts

25   of one of said characters.

-25-

7.   The method of claim 1, wherein step g) comprising
       generating a signal for said second voice sounds is
       delayed and performed between said steps i) and j).

8.   The method of claims 1 and 3, wherein said second
       voice sounds say the words of said first selected
       verbal expression.

9.   The method of claims 1 and 3, wherein said second
       voice sounds say words in a voice different than the
       voices of said first and second talking characters.

-26-

10.   A method of simulating voice conversations by a
video system (42) that generates a signal (44)
representing animated pictures of two or more
talking characters (17, 18) for display on a
5   video screen (11) and generates a signal (41)
representing the respective voices of the
talking characters,

wherein digital data for background scenes and
10   digital data for each animated character (17,18)
and digitized voice data are each stored separately
on a data storing medium (43) and read by said
video system (42), said method comprising the
following steps:

15   a) digitally storing first animated picture data (70)
for a first (18) talking character;

b) said video system (42) generates (51) a
signal (44) from said animated picture data (70)
20   for display as animated pictures of a first scene
on said video screen (11);

c) said video system (42) transmits (72) a first set
of alternative guidance words or other preprogrammed
25   verbal expressions (52) in digital form to a display
means (13) during said first scene;

-27-

d) one of said first set of verbal expressions is manually selected (14) and a control device (48) transmits a corresponding first selection signal (53) to the video system (42);

5   e) said video system (42) digitally stores first voice sound data portions (57) for said first talking character (18) corresponding to said first set of alternative verbal expressions (52);

10   f) said video system (42) generates (54) a signal (41) from one portion of said first voice sound data (57) in accordance with said transmitted first selection signal (53) for output as first voice sounds of said first talking character (18);

15   g) said video system (42) transmits (72) to a display means (13) a second set of alternative guidance words or other preprogrammed verbal expressions (52) in digital form corresponding to a set of alternative actions;

20   h) one of said second set of verbal expressions is manually selected (14) and a control device (48) transmits a corresponding second selection signal (53) to the video system (42) thereby selecting an action from said set of alternative actions;

-28-

i) digitally storing second animated picture data (71)
for a second talking character (17, 18, 30, 36) animated
in accordance with said selected action;

5   j) said video system (42) generates (55) a signal (44)
from said second animated picture data (71) for display
as animated pictures of said second character in a
second scene on said video screen (11);

10   k) said video system (42) digitally stores second
voice sound data portions (58) for said second talking
character corresponding to said second set of
alternative verbal expressions (52);

15   l) said video system (42) generates (56) a signal (41)
from one portion (74) of said second voice sound data
portions (58) in accordance with said transmitted second
selection signal for output as voice sounds of said
second talking character; and

20   m) said video system (42) transmits a third set (59)
of alternative guidance words or other preprogrammed
verbal expressions (52) in digital form in accordance
with said transmitted selection signal to a display
means (13) in order to be selected and generate a
25   signal for corresponding voice sounds.

11.   The method of claim 10, wherein said set of alternative
actions includes hugging and kissing and wherein said
first or second scenes show said two characters
30   hugging and kissing.

-29-
AMENDED CLAIMS
[received by the International Bureau
on 15 December 1993 (15.12.93); original claims 1-11 amended; new claims
12-16 added; (12 pages.)]

1.   A method of simulating voice conversations by a
      video system (42) that generates a signal (44)
      representing animated pictures of two or more
5   talking characters (17,18) for display on a
      video screen (11) and generates a signal (41)
      representing the respective voices of the
      talking characters, the words of one character
10   being selected by a human player (12), said
      method comprising the following steps:

      (a) digitally storing distinctive voices for at least
      two talking characters, each in the form of voice
15   sound data (57,58) representing a plurality of
      sentences, phrases, word segments or phonemes;

      (b) digitally storing a preprogrammed branching
      dialog (60,69) between a first animated character (17)
20   and a second animated character (18), each branch
      comprising a plurality of alternative verbal
      expressions (52);

      (c) generating a video signal (44) representing an
25   image of said said first and second characters (17,18)
      for display on a video screen (11);

      (d) displaying on a hand-held controller apparatus (47)
      a first set (13) of alternatively selectable verbal
30   expressions, each corresponding to a branch in said
      dialog;

-30-

(e) receiving from said hand-held controller (47) a
manually initiated signal (53) representing a selected
verbal expression in said first set (13) of verbal
expressions, thereby selecting a branch in the dialog;

5   (f) digitally reading first voice sound data (73) that
corresponds to said selected verbal expression (15)
for the voice of said first character;

(g) generating (54) an audio signal (41) from said
10   first voice sound data (73) representing the voice
of said first character (17) speaking said selected
verbal expression (15);

(h) digitally reading second voice sound data (74)
15   for the voice of said second character (18) speaking
the verbal expression (16) that follows next in the
selected branch of the dialog;

(i) generating (56) an audio signal (41) from said
20   second voice sound data (74) representing the voice
of said second character (18); and

(j) displaying on said hand-held controller (47)
a second set of alternatively selectable verbal
25   expressions that follows next for said first
character (17) in the selected branch of the dialog.

2.   The method of claim 1, wherein one of said
characters is shown hugging or kissing (Fig 3) the
30   other character.

-31-

3.   The method of claim 1, wherein said hand-held
      controller is a portable game system (46) with program
      cartridge.

4.   A method of simulating voice conversations by a
5   video system (42) that generates a signal (44)
      representing animated pictures of two or more
      talking characters (17,18) for display on a
      video screen (11) and generates a signal (41)
      representing the respective voices of the
10   talking characters, the words of one character
      being selected by a human player (12), said
      method comprising the following steps:

      (a) digitally storing distinctive voices for at least
15   two talking characters, each in the form of voice
      sound data (57,58) representing a plurality of
      sentences, phrases, word segments or phonemes;

      (b) digitally storing a preprogrammed branching
20   dialog (60,69) between a first animated character (17)
      and a second animated character (18), each branch
      comprising a plurality of alternative verbal
      expressions (52);

25   (c) generating a video signal (44) representing an
      image of said said first and second characters (17,18)
      for display on a video screen (11);

      (d) displaying on a hand-held controller apparatus (47)
30   a first set (13) of alternatively selectable verbal
      expressions, each corresponding to a branch in said
      dialog;

-32-

(e) receiving from said hand-held controller (47) a
manually initiated signal (53) representing a selected
verbal expression in said first set (13) of verbal
expressions, thereby selecting a branch in the dialog;

5

(f) digitally reading first voice sound data (73) that
corresponds to said selected verbal expression (15)
for the voice of said first character;

10

(g) generating (54) an audio signal (41) from said
first voice sound data (73) representing the voice
of said first character (17) speaking said selected
verbal expression (15);

15

(h) changing said video signal (44) to indicate that
the first character (17) is speaking to the second
character (18);

20

(i) digitally reading second voice sound data (74)
for the voice of said second character (18) speaking
the verbal expression (16) that follows next in the
selected branch of the dialog;

25

(j) generating (56) an audio signal (41) from said
second voice sound data (74) representing the voice
of said second character (18);

(k) changing said video signal (44) to indicate that
the second character (18) is speaking to the first
character (17); and

30

(l) displaying on said hand-held controller (47)
a second set of alternatively selectable verbal
expressions that follows next for said first
character (17) in the selected branch of the dialog.

5.   The method of claim 4, wherein said video
       signal (44) is changed to show moving lips on the
       face of the first character (17) when said audio
       signal (41) is generated (54) from said first voice
5   sound data (73); and
       wherein said video signal (44) is changed to show
       moving lips on the face of the second character (18)
       when said audio signal (41) is generated (56) from
       said second voice sound data (74).

10

6.   The method of claim 5, wherein said moving lips
       are lip-synchronized with the corresponding voices in
       said audio signal.

15   7.   The method of claim 4, further comprising the step
       of altering either or both of said audio signals (41)
       so that the signal indicates unspoken thoughts of an
       on-screen character.

20   8.   A method of simulating voice conversations by a
       video system (42) that generates a signal (44)
       representing animated pictures of two or more
       on-screen talking characters (17,18) for display
       on a video screen (11) and generates a signal (41)
25   representing the respective voices of the
       on-screen talking characters and an off-screen
       character, the words of the off-screen character
       being selected by a human player (12), said
       method comprising the following steps:

30

       (a) digitally storing distinctive voices for at least
       three talking characters, each in the form of voice
       sound data (57,58) representing a plurality of
       sentences, phrases, word segments or phonemes;

-34-

(b) digitally storing a preprogrammed branching
dialog (60,69) between a first on-screen animated
character (17) and a second on-screen character (18)
and an off-screen character, each branch comprising
5   a plurality of alternative verbal expressions (52);

(c) generating a video signal (44) representing
an image of said said first and second on-screen
characters (17,18) for display on a video screen (11);
10

(d) displaying on a hand-held controller apparatus (48)
a first set (13) of alternatively selectable verbal
expressions, each corresponding to a branch in said
dialog;
15

(e) receiving from said hand-held controller (48) a
manually initiated signal (53) representing a selected
verbal expression in said first set (13) of verbal
expressions, thereby selecting a branch in the dialog;
20

(f) digitally reading first voice sound data that
corresponds to said selected verbal expression for
the voice of said off-screen character;

25   (g) generating (54) an audio signal (41) from said
first voice sound data representing the voice of
said off-screen character speaking said selected
verbal expression;

30   (h) digitally reading second voice sound data (73)
for the voice of said first on-screen character (18)
speaking the verbal expression (15) that follows next
in the selected branch of the dialog;

-35-

(i) generating (54) an audio signal (41) from said
second voice sound data (73) representing the voice
of said first on-screen character (18);

5   (j) digitally reading third voice sound data (74) for
the voice of said second on-screen character (17)
speaking the verbal expression (16) that follows next
in the selected branch of the dialog;

10   (k) generating (56) an audio signal (41) from said
third voice sound data (74) representing the voice
of said second on-screen character (17); and

(l) displaying on said hand-held controller (47)
15   a second set of alternatively selectable verbal
expressions that follows next for said off-screen
character in the selected branch of the dialog.

   9.   The method of claim 8, wherein said video
20   signal (44) is changed to indicate which of said
          on-screen characters is speaking.

   10. The method of claim 9, wherein said video
          signal (44) is changed to show moving lips on the face
25   of said first on-screen character (18) when said audio
          signal is generated from said second voice sound
          data (73) and to show moving lips on the face of said
          second on-screen character (17) when said audio signal
          is generated from said third voice sound data (74).

30
   11. The method of claim 10, wherein said moving lips
          are lip-synchronized with the corresponding voices in
          said audio signal (41).

12.   The method of claim 8, wherein said hand-held
      controller is a portable game system (46) with
      program cartridge.

5   13.   The method of claim 8, wherein said selected
      verbal expression for said off-screen character is
      displayed on said video screen.

14.   The method of claim 8, wherein one of said
10   characters is shown hugging or kissing (Fig. 3) the
      other character.

15.   A method of simulating voice conversations by a
      video system (42) that generates a signal (44)
15   representing animated pictures of two or more
      talking characters (17,18) for display on a
      video screen (11) and generates a signal (41)
      representing the respective voices of the talking
      characters, the words of the characters being
20   selected by two corresponding human players (10,12),
      said method comprising the following steps:

      (a) digitally storing distinctive voices for at least
      two talking characters, each in the form of voice
25   sound data (57,58) representing a plurality of
      sentences, phrases, word segments or phonemes;

      (b) digitally storing a preprogrammed branching
      dialog (60,69) between a first animated character (18)
30   and a second animated character (17), each branch
      comprising a plurality of alternative verbal
      expressions (52);

-37-

(c) generating a video signal (44) representing an image of said said first and second characters (18,17) for display on a video screen (11);

5   (d) displaying on a first hand-held controller apparatus (48) a first set (13) of alternatively selectable verbal expressions, each corresponding to a branch in said dialog;

10   (e) receiving from said first hand-held controller (48) a manually initiated signal (53) representing a first selected verbal expression in said first set (13) of verbal expressions, thereby selecting a branch in the dialog;

15

(f) digitally reading first voice sound data (73) that corresponds to said first selected verbal expression for the voice of said first character (18);

20   (g) generating (54) an audio signal (41) from said first voice sound data (73) representing the voice of said first character (18) speaking said first selected verbal expression;

25   (h) displaying on a second hand-held controller (47) apparatus a second set of alternatively selectable verbal expressions that follows next for said second character (17) in the selected branch of the dialog;
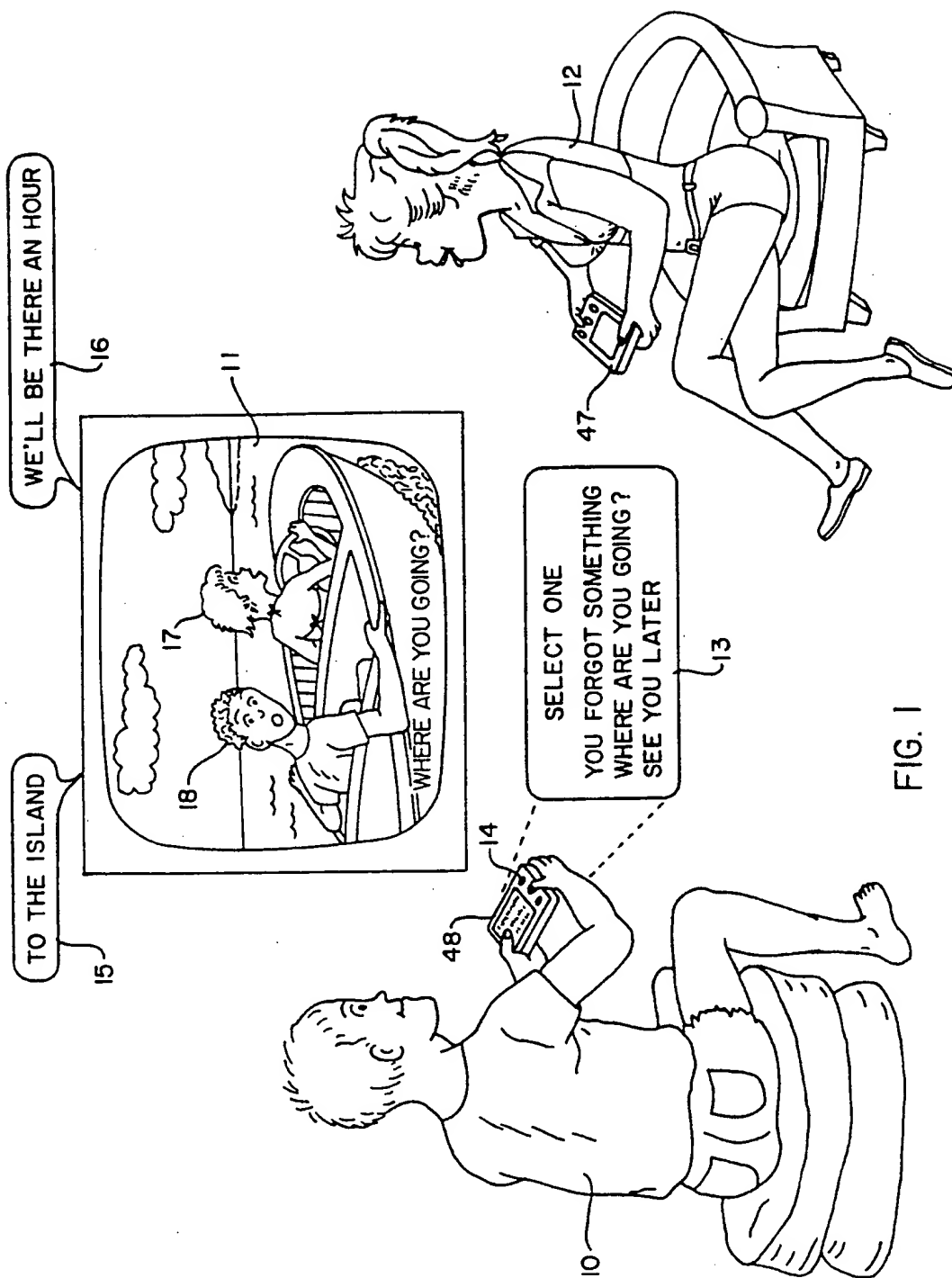
30   (i) receiving from said second hand-held controller (47) a manually initiated signal (53) representing a second selected verbal expression in said second set (26) of verbal expressions, thereby selecting a next branch in the dialog;

-38-

(j) digitally reading second voice sound data (74) that
corresponds to said second selected verbal expression
for the voice of said second character (17); and

5   (k) generating (56) an audio signal (41) from said
second voice sound data (74) representing the voice
of said second character (17) speaking said second
selected verbal expression.

10   16. A method of simulating voice conversations by a
video system (42) that generates a signal (44)
representing animated pictures of two or more
talking characters (17,18) for display on a
video screen (11) and generates a signal (41)
15   representing the respective voices of the talking
on-screen characters and two off-screen characters,
the words of the off-screen characters being
selected by two corresponding human players
(10,12), said method comprising the following
20   steps:

(a) digitally storing distinctive voices for at least
four talking characters, each in the form of voice
sound data (57,58) representing a plurality of
25   sentences, phrases, word segments or phonemes;

(b) digitally storing a preprogrammed branching
dialog (60,69) between a first on-screen character (18)
and a second on-screen character (17) and a first
30   off-screen character and a second off-screen
character, each branch comprising a plurality of
alternative verbal expressions (52);

(c) generating a video signal (44) representing
an image of said said first and second on-screen
characters (18,17) for display on a video screen (11);

5   (d) displaying on a first hand-held controller
apparatus (48) a first set (13) of alternatively
selectable verbal expressions, each corresponding
to a branch in said dialog;

10   (e) receiving from said first hand-held controller (48)
a manually initiated signal (53) representing a first
selected verbal expression in said first set (13) of
verbal expressions, thereby selecting a branch in the
dialog;

15
         (f) digitally reading first voice sound data (73) that
corresponds to said first selected verbal expression
for the voice of said first off-screen character;

20   (g) generating (54) an audio signal (41) from said
first voice sound data (73) representing the voice
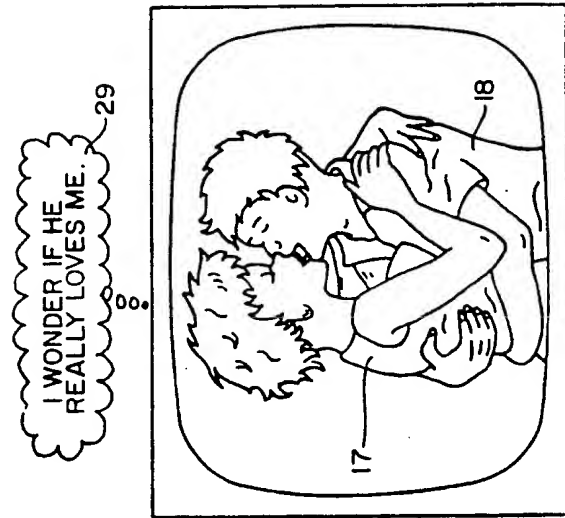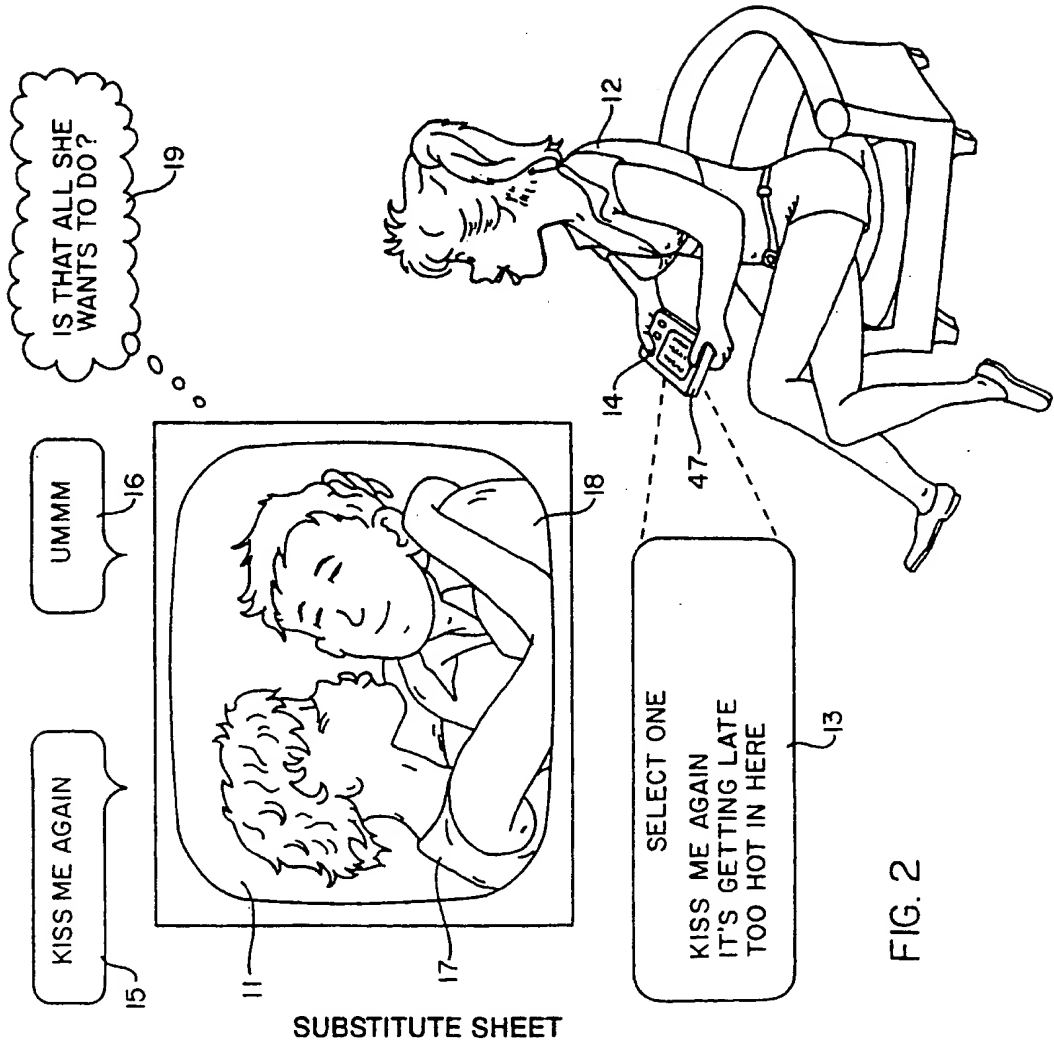of said first off-screen character speaking said
first selected verbal expression;

25   (h) digitally reading second voice sound data (73)
for the voice of said first on-screen character (18)
speaking the verbal expression that follows next in
the selected branch of the dialog;

30   (i) generating (56) an audio signal (41) from said
second voice sound data (74) representing the voice
of said first on-screen character;

-40-

(j) displaying on a second hand-held controller (47)
apparatus a second set of alternatively selectable
verbal expressions that follows next for said second
off-screen character (18) in the selected branch of
5   the dialog;

(k) receiving from said second hand-held controller (47)
a manually initiated signal (53) representing a second
selected verbal expression in said second set (26) of
10   verbal expressions, thereby selecting a next branch in
the dialog;

(l) digitally reading third voice sound data (73)
that corresponds to said second selected verbal
15   expression for the voice of said second off-screen
character;

(m) generating (54) an audio signal (41) from said
third voice sound data (73) representing the voice
20   of said second off-screen character speaking said
second selected verbal expression;

(n) digitally reading fourth voice sound data (74)
for the voice of said second on-screen character (17)
25   speaking the verbal expression that follows next in
the selected branch of the dialog; and

(o) generating (56) an audio signal (41) from said
fourth voice sound data (74) representing the voice
30   of said second on-screen character (17).

FIG. I

FIG.3

FIG. 2

FIG. 4

FIG. 5

FIG. 6

FIG. 7

PRY THE DOOR OPEN
LIFT UP THE DOOR
DROP THE PIPE
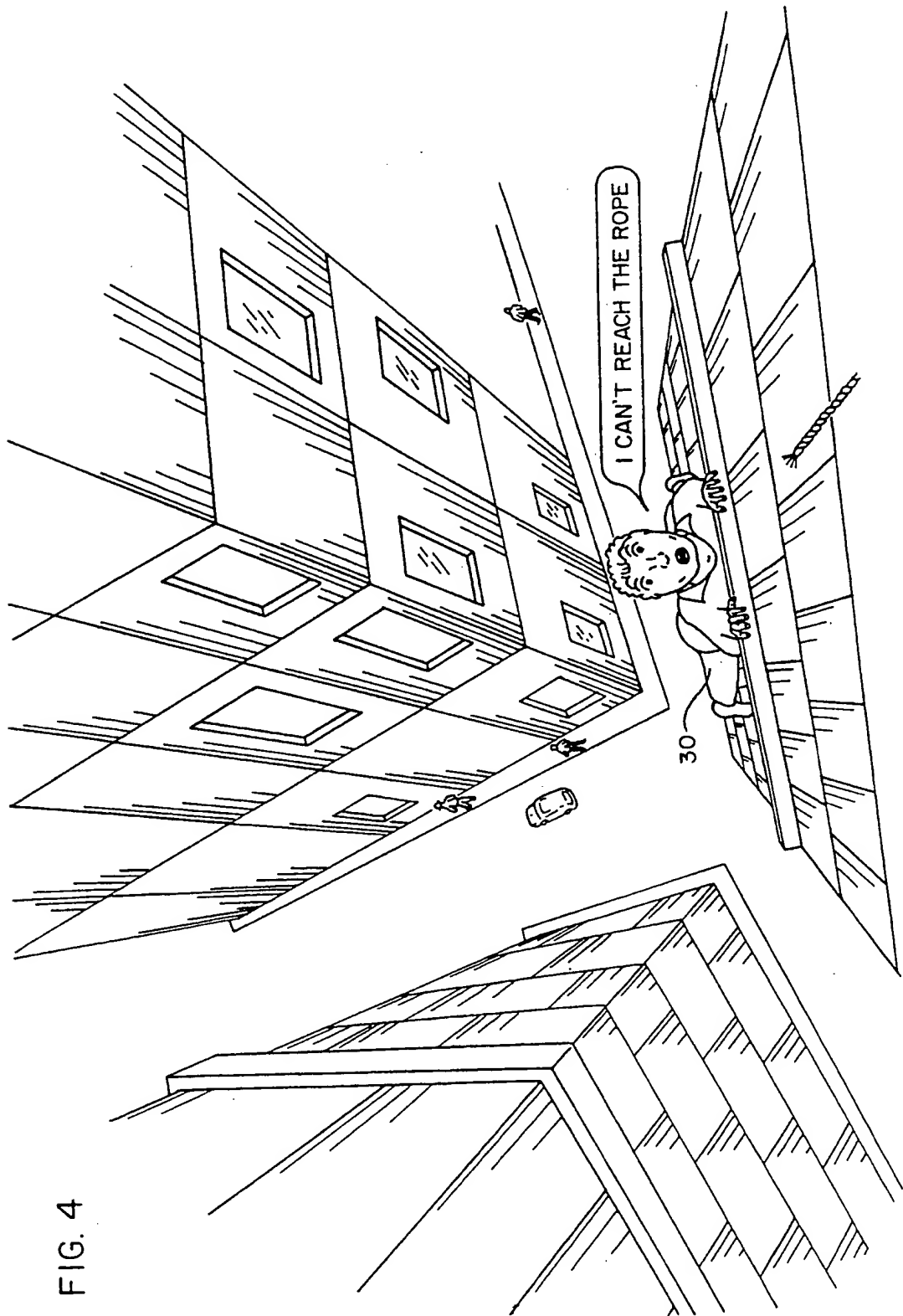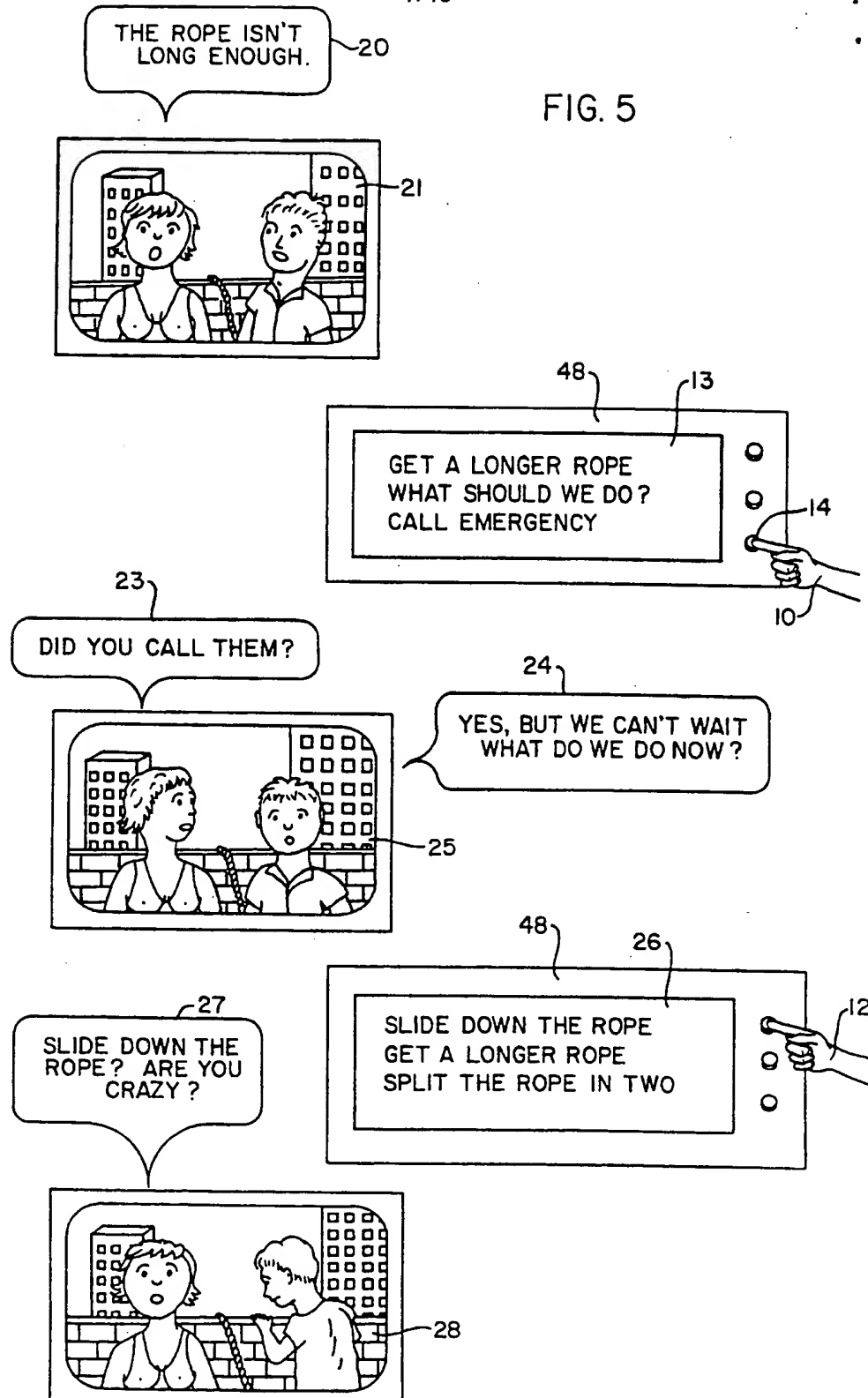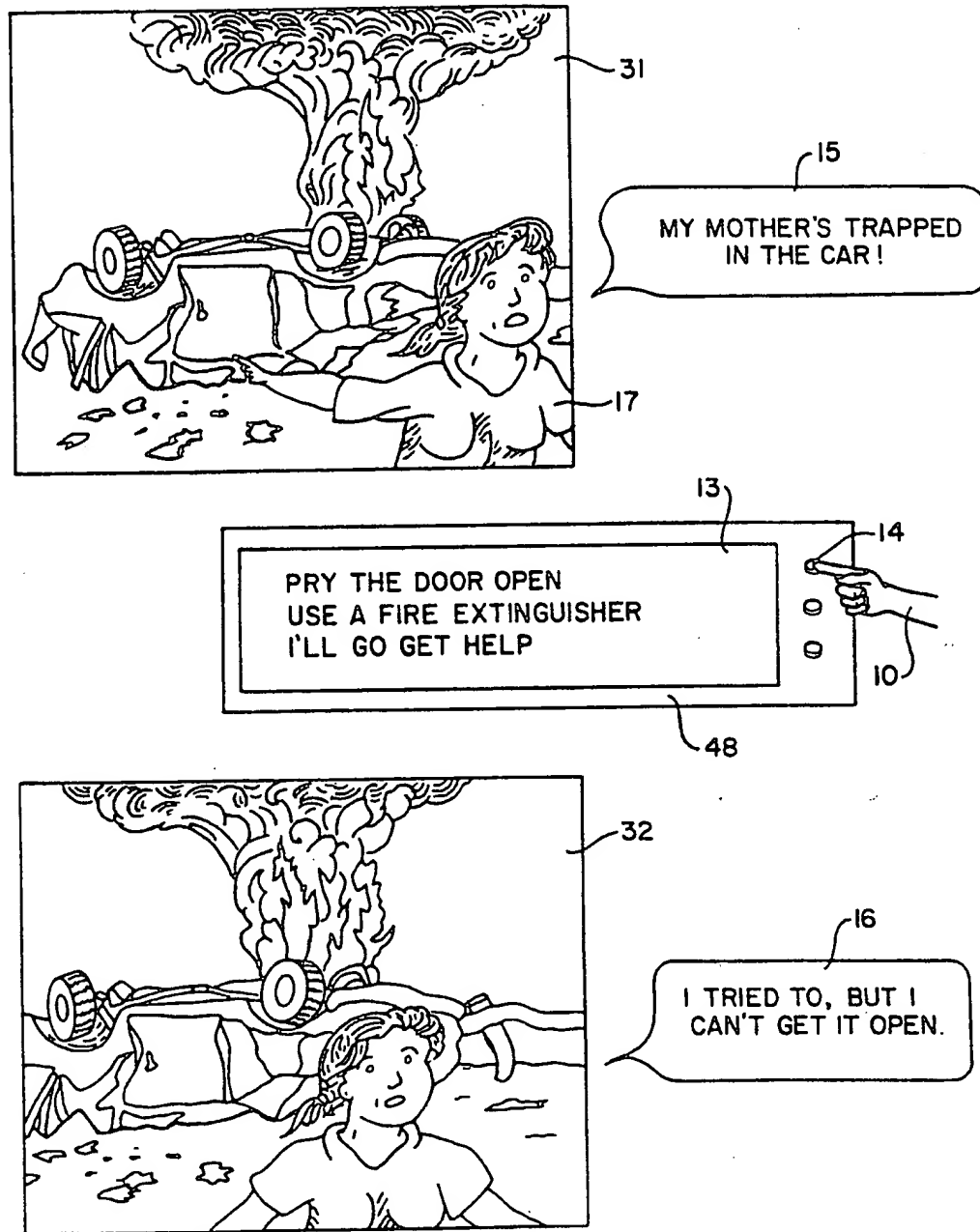
SUBSTITUTE SHEET

FIG. 8
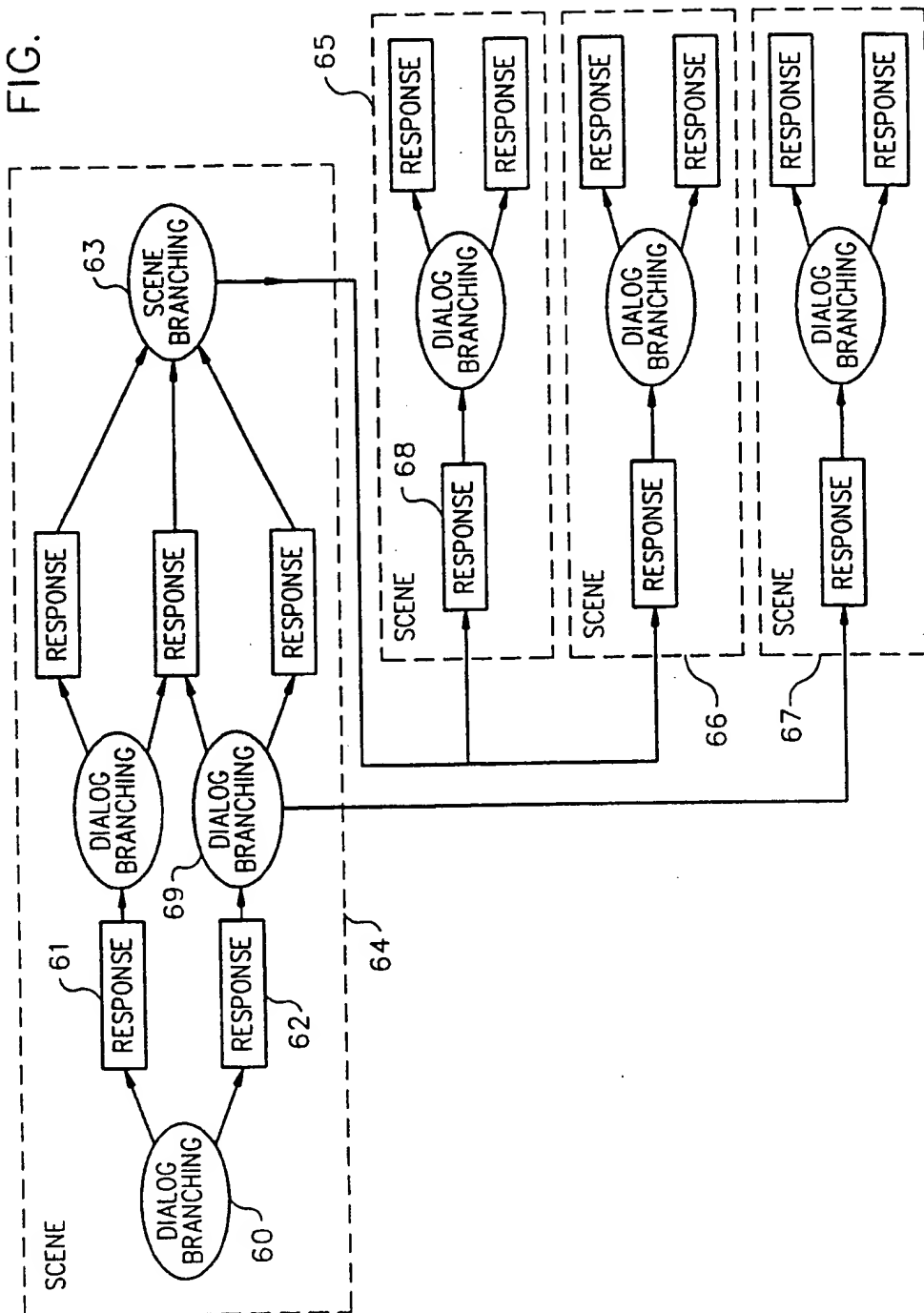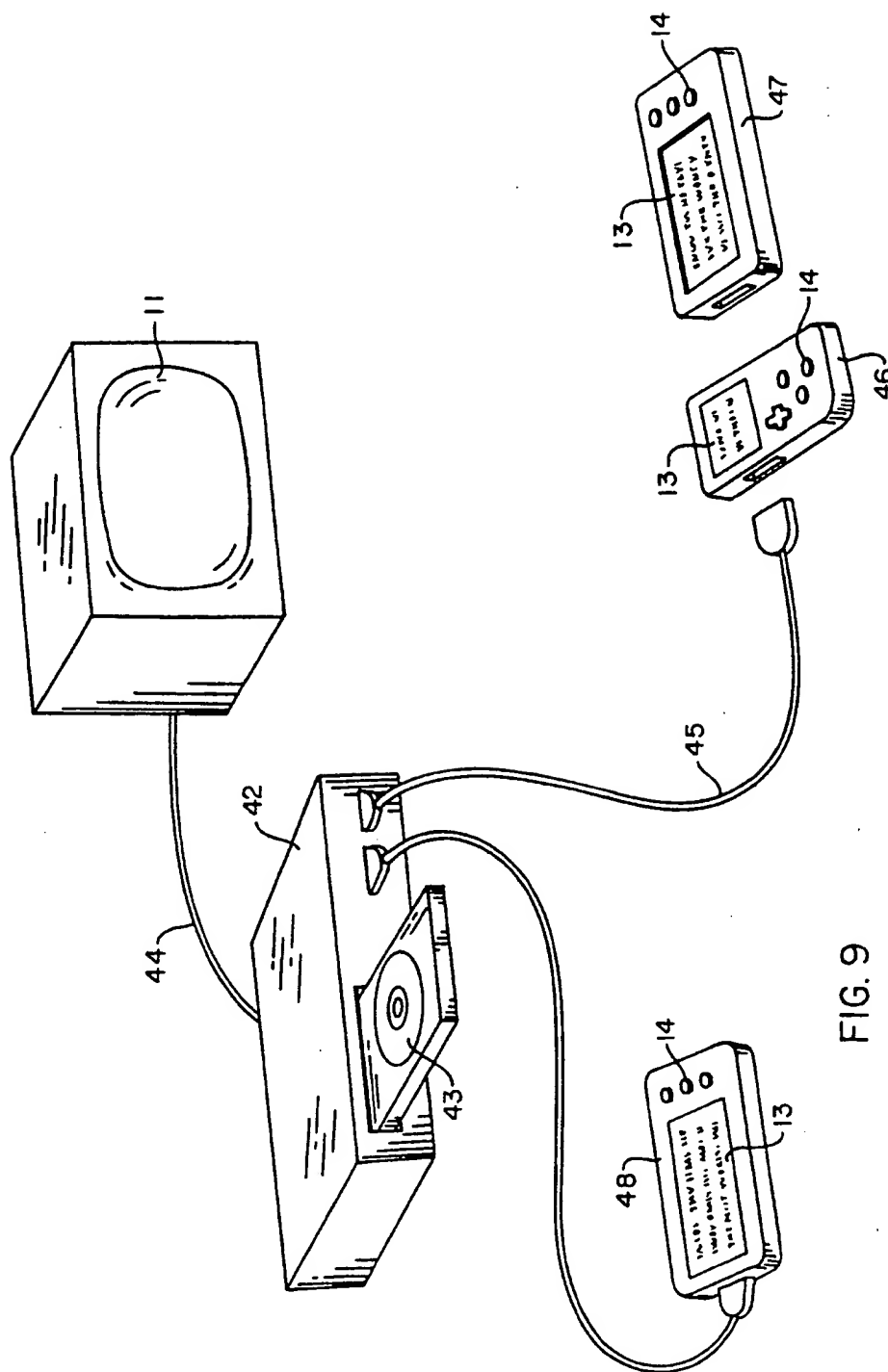
FIG. 9
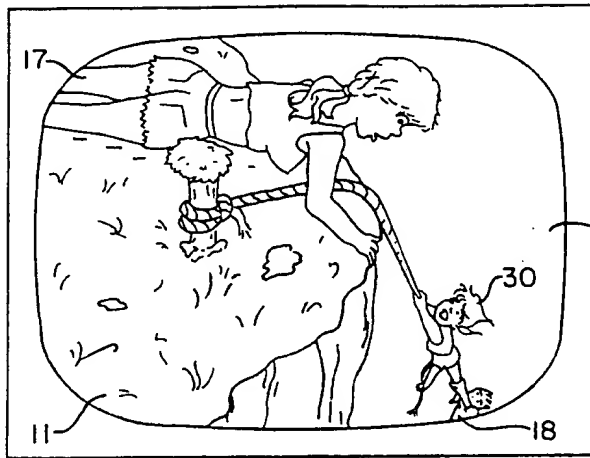
FIG. 10
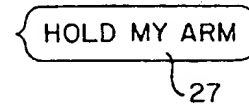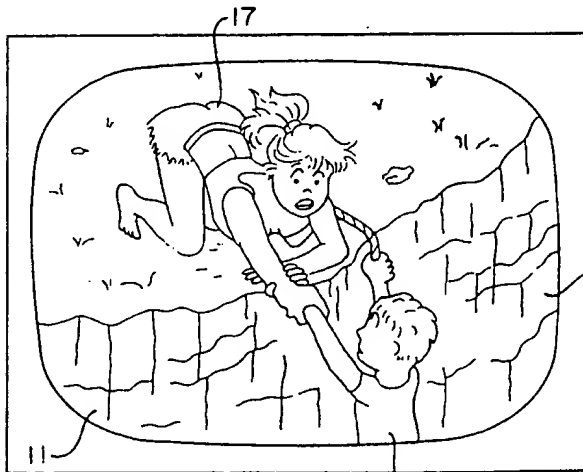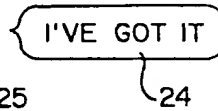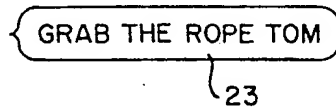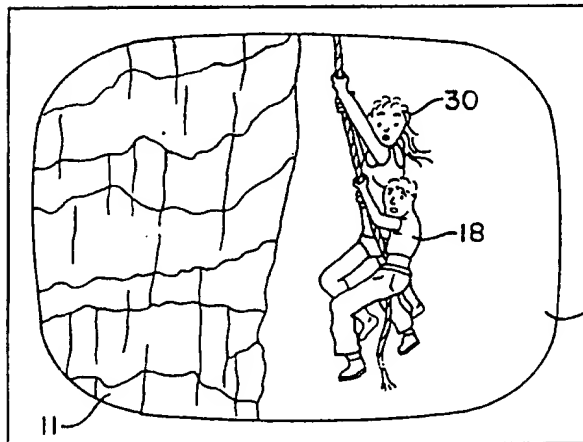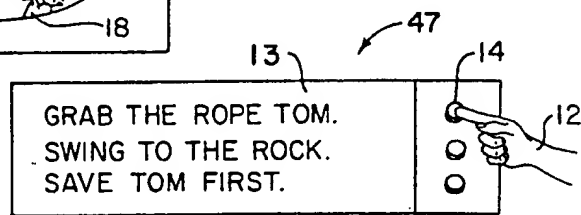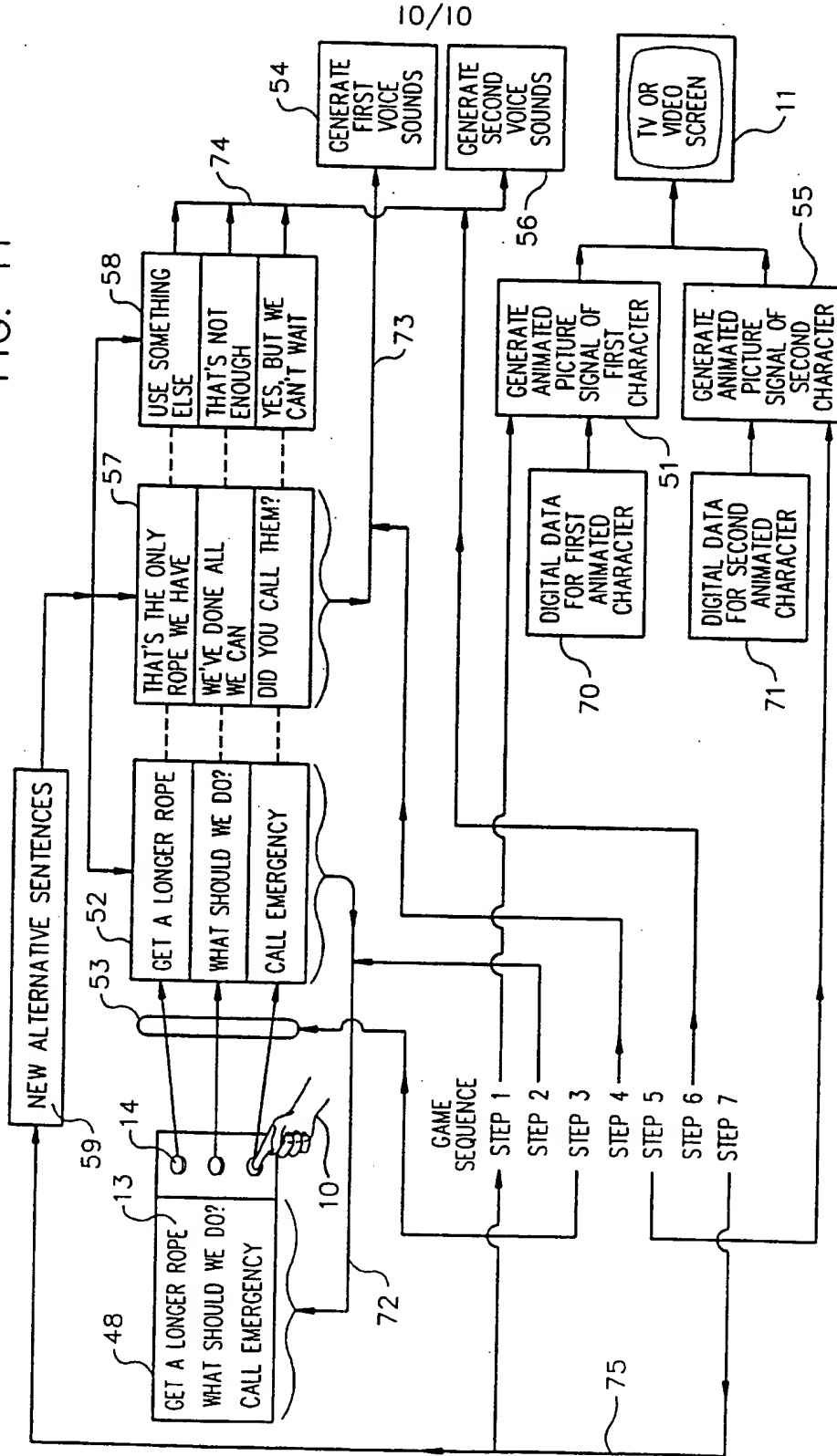
10/10

FIG. 11

A.   CLASSIFICATION OF SUBJECT MATTER

IPC(5) :A63B 09/24

US CL :273/434

According to International Patent Classification (IPC) or to both national classification and IPC

B.   FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 273/434–437, Dig 28, 85G; 364/410; 434/323, 321

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

None

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 4,445,187 (Best) 24 April 1984, see entire document.	1-10
Y	US, A, 5,006,987 (Harless) 09 April 1991, see particularly Fig 2, also see col. 5 through col. 6 line 68; and col. 8, lines 4-30.	1-11

☐   Further documents are listed in the continuation of Box C.   ☐   See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 September 1993	2 0 OCT 1993

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer FOR J. Harrison
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